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On the occurrence of the Black Stork *Ciconia nigra* in West Africa

by J. Frank Walsh

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The Black Stork *Ciconia nigra* has probably been uncommon in West Africa throughout the century. Its main breeding range in the Palaearctic is located east of 16°E, and the isolated, and declining, population in Iberia is partly sedentary (Cramp & Simmons 1977). West Africa proper lies between 16°W and 10°E. Brown *et al.* (1982) map the Black Stork as occurring right across West Africa between approximately 11° and 15°N. They also state that it is scarce in West Africa, though it enters the continent through Gibraltar and also crosses the Mediterranean on a broad front. The decline of the Western European population prompted Moreau (1972) to suggest that "the scanty records in West Africa may never be augmented now . . .". This forecast has, happily, proved to be unduly pessimistic. Since 1965 there have been published and unpublished reports of Black Storks in five West African countries, while recent aerial surveys, reported below, provide records for six countries. In one or two localities Black Storks, though never common, have occurred with some regularity.

Published observations of Black Storks in West Africa

Bannerman (1953) was able to report very few cases of Black Storks in West Africa, citing records only from the Gambia, Guinea Bissao, Ghana and Nigeria. Published reports in the last 25 years (Walsh 1989) include birds in the lower Senegal valley in both Mauritania (Browne 1982) and Senegal (Roux 1973, Morel & Roux 1973), with up to 16 birds present in early 1972. There is a single record in February from the inland delta of the Niger in Mali (Lamarche 1980), and a number of records from Nigeria. From the latter country one was seen in the Komodugu-Gana valley in January 1965 (Sharland & Wilkinson 1981), one from the Oli valley in April 1968 (Walsh 1968), one from the Benue valley in November 1969 (Fry 1970) and up to six in several recent years during October–March from the Gaji river in the Yankari Game Reserve (Geerling 1976, Crick & Marshall 1981, Green 1989). Black Storks have also been seen in recent years in the Kano valley in the Falgore Game Reserve (Wilkinson & Beecroft (1985). In addition a flock of eight was seen in the Red Volta valley in Burkina Faso in January 1983 (Y. Thonnerieux, pers. comm.).

Aerial observations 1987–1990

During my work for the Onchocerciasis Control Programme of the World Health Organisation since 1987 I have flown more than 650 hours in helicopters along river valleys in West Africa. All riverine habitats in Ghana, Togo and Benin, likely to be suitable for the Black Stork, were surveyed on several occasions. A single flight was made along the Comoé–Léraba valley of Burkina Faso/Ivory Coast in February 1989, and a few flights were made in southern Burkina Faso in September–November and in southwest Niger in September–November, January and April.

All flights were made in Hughes 500 helicopters, generally at heights less than 200 ft above ground and at speeds of 80 to 100 knots. Flights were made to investigate the hydrological conditions or with the intention of spraying chemicals into the rivers. In addition details were logged of all storks which were encountered.

Observations of Black Storks from helicopters (together with the sole ground observation) are listed in Table 1 in longitudinal order starting in the west. Black Storks were seen on 32 separate occasions, and a total of 82 birds counted, though some individuals were almost certainly seen on more than one date. The seasonality of observations is shown in Table 2. Group size (averaging 2.6 birds/sighting) and association with the Woolly-necked Stork *Ciconia episcopus* are shown in Figure 1. In addition Black Storks are found in company with other species, especially Grey Heron *Ardea cinerea* and Spur-winged Goose *Plectropterus gambensis*, and occasionally with Saddle-billed Stork *Ephippiorhynchus senegalensis*, when they are at rest on riverine sandbanks.

Observation from helicopters usually precludes detailed examination of individual birds, but parties of four on 25 October 1988 and 8 February 1989 each consisted of two adult and two immature birds, while a party of three on 20 January 1989 was composed of two adults and one immature, and two birds seen together on 16 November 1988 proved to be an adult and an immature.

TABLE 1
Details of Black Storks seen in West Africa during 1987–1990

| Country | River basin | Coordinates | Date | No. of birds | Vegetation | Land use/occupancy |
|------------------------------|-----------------|-----------------|----------|--------------|----------------------------|--------------------------------|
| Ivory Coast/ Burkina Faso | Comoé | 9°51'N, 4°50'W | 8.2.89 | 3 | Northern Guinea Savanna | Game Reserve/ Wilderness |
| Ivory Coast/ Burkina Faso | Comoé | 9°50'N, 4°48'W | 8.2.89 | 1 | Northern Guinea Savanna | Game Reserve/ Wilderness |
| Ivory Coast/ Burkina Faso | Comoé | 9°41'N, 4°26'W | 8.2.89 | 4 | Northern Guinea Savanna | Game Reserve/ Wilderness |
| Ghana | Black Volta | 8°36'N, 2°25'W | 7.2.89 | 1 | Southern Guinea Savanna | National Park |
| Ghana | Black Volta | 8°36'N, 2°25'W | 9.1.90 | 1 | Southern Guinea Savanna | National Park |
| Ghana | Mole | 9°23'N, 1°50'W | 10.1.90 | 2 | Southern Guinea Savanna | National Park |
| Ghana | Mole | 9°18'N, 1°33'W | 10.1.90 | 1 | Southern Guinea Savanna | Wilderness |
| Ghana | Sissili/Kulpawn | 10°49'N, 1°40'W | 17.11.87 | 8 | Northern Guinea Savanna | Wilderness |
| Ghana | Sissili/Kulpawn | 10°36'N, 1°34'W | 25.10.88 | 4 | Northern Guinea Savanna | Wilderness |
| Ghana | Sissili/Kulpawn | 10°09'N, 1°25'W | 11.1.90 | 6 | Northern Guinea Savanna | Sparsely populated |
| Ghana | Sissili/Kulpawn | 10°16'N, 1°15'W | 11.1.90 | 1 | Northern Guinea Savanna | Sparsely populated |
| Ghana | White Volta | 9°21'N, 1°17'W | 7.3.89 | 3 | Open grassland | Moderately populated |
| Ghana* | White Volta | 10°21'N, 1°05'W | 4.2.87 | 2 | Open grassland | Moderately populated |
| Ghana | White Volta | 9°56'N, 0°59'W | 20.1.89 | 3 | Open grassland | Sparsely populated |
| Ghana | White Volta | 9°56'N, 0°59'W | 7.3.89 | 5 | Open grassland | Sparsely populated |
| Togo | Koumongou | 10°13'N, 0°29'E | 6.2.90 | 2 | Northern Guinea Savanna | National Park |
| Togo | Koumongou | 10°13'N, 0°29'E | 10.2.90 | 1 | Northern Guinea Savanna | National Park |
| Togo | Koumongou | 10°11'N, 0°37'E | 9.2.88 | 2 | Northern Guinea Savanna | National Park |
| Togo | Koumongou | 10°11'N, 0°39'E | 9.2.88 | 1 | Northern Guinea Savanna | National Park |
| Togo | Koumongou | 10°11'N, 0°39'E | 3.3.90 | 1 | Northern Guinea Savanna | National Park |
| Togo** | Koumongou | 10°09'N, 0°45'E | 17.3.90 | 1 | Northern Guinea Savanna | National Park |
| Togo | Oti | 10°40'N, 0°46'E | 6.1.90 | 1 | Open flood plain | Game Reserve |
| Benin/ Burkina Faso | Pendjari | 11°12'N, 1°09'E | 16.11.88 | 2 | Northern Guinea Savanna | National Park/ Game Reserve |
| Benin/ Burkina Faso | Pendjari | 11°12'N, 1°09'E | 11.1.89 | 1 | Northern Guinea Savanna | National Park/ Game Reserve |
| Benin/ Burkina Faso | Pendjari | 11°12'N, 1°09'E | 24.1.89 | 9 | Northern Guinea Savanna | National Park/ Game Reserve |
| Benin/ Burkina Faso | Pendjari | 11°12'N, 1°09'E | 6.1.90 | 1 | Northern Guinea Savanna | National Park/ Game Reserve |
| Benin/ Burkina Faso | Pendjari | 11°13'N, 1°09'E | 24.1.89 | 4 | Northern Guinea Savanna | National Park/ Game Reserve |
| Benin/ Burkina Faso | Pendjari | 11°18'N, 1°18'E | 24.1.89 | 3 | Northern Guinea Savanna | National Park/ Game Reserve |
| Benin/ Burkina Faso | Pendjari | 11°12'N, 1°47'E | 25.1.89 | 2 | Northern Guinea Savanna | National Park |
| Benin | Mekrou | 11°35'N, 2°20'E | 1.12.87 | 1 | Northern Guinea Savanna | National Park/ Wilderness |
| Benin/ Burkina Faso | Mekrou | 11°41'N, 2°20'E | 25.1.89 | 3 | Northern Guinea Savanna | National Park |
| Benin/Niger | Mekrou | 12°15'N, 2°26'E | 25.1.89 | 2 | Northern Guinea Savanna | National Park |

*Reported in Grimes (1987)

**Observation made on the ground

Discussion

Table 1 includes the first published records of Black Storks occurring in the territories of Ivory Coast, Burkina Faso, Togo, Benin and Niger, and adds substantially to the data for Ghana (Grimes 1987).

TABLE 2
Seasonal distribution of Black Storks seen from helicopters

| Month | Hours flown | Sightings | Number of birds | Sightings/10 flight hrs | Birds/10 flight hrs |
|-----------|-------------|-----------|-----------------|-------------------------|---------------------|
| July/Aug | 184 | 0 | — | — | — |
| September | 75 | 0 | — | — | — |
| October | 74 | 1 | 4 | 0.14 | 0.54 |
| November | 40 | 2 | 10 | 0.50 | 2.50 |
| December | 18 | 1 | 1 | 0.56 | 0.56 |
| January | 84 | 15 | 40 | 1.79 | 4.76 |
| February | 93 | 9 | 18 | 0.97 | 1.94 |
| March | 27 | 3 | 9 | 1.11 | 3.33 |
| April | 59 | 0 | — | — | — |

Most of the 25 localities from which Black Storks were recorded during helicopter flights lie within a narrow latitudinal band, 9°30'N to 11°30'N, though flights covered the area from 7°30'N to 12°30'N. Published records from Nigeria also fall predominantly into the narrow band. This suggests that the map in Brown *et al.* (1982) is not very accurate.

The observations of Black Storks in both the Mauritanian (Browne 1982) and Senegalese (Roux 1973, Morel & Roux 1973) sections of the Senegal river delta (*c.* 16°20'N to 16°30'N, and west of 16°W) strongly suggest that birds crossing the Mediterranean at Gibraltar are involved. These are probably of the Iberian breeding population, at least part of which migrates (Cramp & Simmons 1977). However, movements of 121 Black Storks over the Pyrenees in 1986 and an estimated 200 passing through France in autumn 1987 ('European News', *British Birds* (1987) 80: 322, and (1988) 81: 331) indicate that non-Iberian birds, of unknown provenance, are involved. Records of Black Storks from further east in West Africa are more problematical, but October sightings from Ghana (Table 1) and Nigeria (Crick & Marshall 1981) suggest a broad-front crossing of the Mediterranean, and a direct crossing of the Sahara, as reported by Brown *et al.* (1982), rather than infiltration from the Sudan of birds which have passed through the Levant.

Sites in the Black Volta and Pendjari valleys provide records from consecutive seasons, while the lower Koumougou valley had a pair of storks in early 1988 and early 1990, though none were seen there during several survey flights in 1989. The Sissili/Kulpawn area was inhabited in three consecutive seasons, from 1987 to 1989, though sightings were from different localities. There is little doubt that this area and the Pendjari valley are the most important wintering sites for Black Storks in the area studied.

Although flights were not planned with stork surveys in mind, there was adequate coverage, with the unfortunate exception of December, to establish the seasonal pattern (Table 2). It is clear from Tables 1 and 2 that Black Storks reached the surveyed zone rather late in the year, with the first sighting on 25 October. Numbers built up at the turn of the year (perhaps in December) and all birds had departed by the end of March,

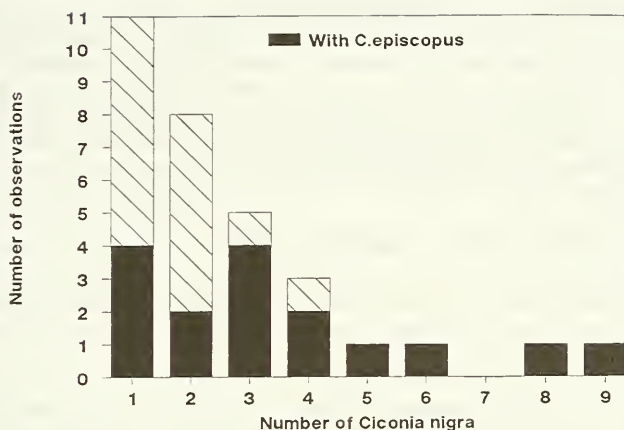


Figure 1. Group size of *Ciconia nigra* and association with *Ciconia episcopus*.

the latest sighting being the ground observation on 17 March in Togo, though there is a record of a single bird on 6 April in NW Nigeria (Walsh 1968). There was clear evidence of wintering at one site in the Pendjari valley, with storks present on 16 November 1988 and 11 and 24 January 1989, while at a site in the White Volta valley storks were present in both January and March 1989. Furthermore, the seasonal data, in general, support the view that Black Storks are wintering in the area, rather than passing through. Also it is most unlikely that any Black Storks spent the summer in the regularly surveyed areas of Ghana, Togo and Benin. The late arrival in the wintering zone could have been owing to a slow movement southwards through the Sahel and Sudan Savanna zones as conditions deteriorated, or to a slow diffusion westwards of birds which entered Africa via the Levant. However, there are no observations from Mali and Niger to support the former idea and the latter seems unlikely given that the easternmost records were not noticeably earlier than those from the west.

Black Storks occurred in very small parties (from one to nine birds) with only four of 32 records involving more than four birds (Fig. 1). It is likely that they move in pairs, or family parties, though individuals from the same Danish brood have been reported migrating in different directions (Brown *et al.* 1982).

In half the observations Black Storks were associated with Woolly-necked Storks. This is the commonest stork in well wooded parts of the West African savanna belt and appears to have similar habitat requirements to the Black Stork. The largest flock of Black Storks, nine birds, was accompanied by two Woolly-necked Storks, suggesting that the tendency to associate is mutual.

Almost all sightings were from medium-sized savanna rivers with well developed gallery forest, flowing through uncut Northern Guinea and Sudan Savanna woodland. The only notable exception, from which there

were several records, was the White Volta valley in Ghana. This is a large, open sandy river, lacking gallery forest. It is also striking that the upper Oti valley in Togo, which is noted for other species of storks, including the White Stork *C. ciconia*, and for the Crowned Crane *Balearica pavonina*, yielded only a single record of the Black Stork, though it was frequently surveyed. This section of the valley is open and lacking gallery forest. Upstream, in Benin where the river becomes the Pendjari, Black Storks again occur regularly in areas where there is well developed riparian woodland.

The disturbing effects of the passage of the helicopter prevented any meaningful observation of stork behaviour. Many birds were already airborne when first seen but others were flushed from riverside trees, sandbanks and small marshes, along with their associates. Probably the majority were at diurnal roosts.

Most of the Black Storks were seen in National Parks or Game Reserves, or in adjacent wilderness areas (Table 1), where vegetation was relatively unscathed. However, the White Volta valley is relatively densely populated, and degraded. Although the important Sissili/Kulpawn area is largely uninhabited at present there are plans for a major rural development programme which will rapidly reduce its suitability for Black Storks.

In general, however, the wintering zone which is referred to here has within it a sufficient chain of National Parks and Game Reserves. Although in most cases these reserved areas are poorly managed and under-protected, at present they maintain reasonable levels of tree cover, and especially of gallery forests. Therefore, it seems that the Black Stork is safe enough in many of its West African wintering sites, providing it can reach them unaffected by the severity of conditions in the Sahel and unmolested by man, especially in the Mediterranean basin.

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The Asian Gull-billed Tern *Sterna nilotica affinis* in Australia

by Richard Schodde

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Until 1977, the only form of the Gull-billed Tern known from Australia was the endemic, heavy-billed and whitish-backed subspecies, *Sterna nilotica macrotarsa* Gould (Peters 1934, Condon 1975). In that year Johnstone (1977) recorded the first specimen of the smaller, east Asian subspecies, *S. n. affinis* Horsfield. It was a bird collected from a group of four at the mouth of the Lawley River, Kimberley Division, in north-western Australia in mid-October 1976. Despite no confirmed records since (*cf.* McKean 1981), there are, however, two other concurrent records of single specimens taken on the estuaries of the East and South Alligator Rivers, Arnhem Land, in early February 1973 and early October 1974 respectively (Fig. 1). These specimens are lodged in the Australian National Wildlife Collection, CSIRO, Canberra.

Both are females in non-breeding plumage, with plain greyish-white crowns and lores (faintly shaft-streaked with black on the immature) and well-defined but narrow black lines through the eyes to over the ear coverts. One bird (5 February 1973) was adult with a convoluted oviduct, and fresh, moulting silvered remiges, and the other (10 October 1974) immature in apparently first-year non-breeding (winter) plumage with straight oviduct and worn, dusky remiges. Ovaries were regressed. The measurements of the specimens are, in mm: ANWC 6040 adult female—flattened wing 260 (in moult), tail 112, tarsus 31.3, exposed culmen 36.2, depth of bill at feather line 12.0; ANWC 17715 immature female—flattened wing 307, tail 122, tarsus 28.5, exposed culmen 36.7, depth of bill at feather line 10.2.

In comparison with endemic Australian *macrotarsa*, the two Alligator River specimens are paler on the crown and less streaked in non-breeding